Minutes of the meeting of the Evaluation and Monitoring Committee (EMC) for assessment of start-ups proposals under Grant for Research and Entrepreneurship across Aspiring Innovators in Technical Textiles (GREAT) guidelines of National Technical Textiles Mission (NTTM) held on Thursday, 14th November 2024 from 1530 hrs (via video conferencing).s

The meeting was chaired by Dr. Renu Swarup, Former Secretary, Department of Biotechnology (DBT), Ministry of Science and Technology. The list of Project Leaders (PLs)/Team members and members of the Evaluation and Monitoring Committee who attended the meeting may be seen at Annexure I.

Agenda 1: Confirmation of Minutes of last EMC meeting.

The minutes of the 6th EMC meeting held on 14th August 2024 were circulated among the members. As no comments have been received, thus the minutes were taken as confirmed.

Agenda 2: Action taken in 7th EMC Meeting: Consideration of fresh Proposal under GREAT:

2 revised proposals from the 5th EMC meeting and 2 revised proposals from the 6th EMC meeting were once again considered for placing before EMC for further review and decision. Out of these 04 proposals that were discussed, 03 proposals were not recommended, and 01 proposals can be taken in the upcoming EPC meeting, only if the proposal is found satisfactory by BTRA, NITRA and Joint Mission Director (RD&I).

The details of these 4 proposals are as follows:

1. **Proposal – Fiber Extraction from Agriculture Waste for Composites & Absorbent Applications (Resubmitted from 5th EMC)**
    a) Proposed By (Project Leader/PL) – Mr. Yuvaraja Duraisamy
    b) Category – Individual
    c) Registration No - NTTM-TEXTILES-00221
    d) Proposal ID - STR-24-00166
    e) Incubator – Periyar University
    f) Total Proposed Cost - INR 48,65,000
        - Ministry's Contribution – INR 43,78,500
        - PL's Contribution – INR 4,86,500
    g) Duration – 18 Months
    h) Deliberations during presentation:

i. The PI informed the committee that he had shifted his incubator from VFSTR TBI Council to Periyar University, which is supported by the Department of Science and Technology (DST).

ii. The committee asked the PI to outline the objectives of the proposal and his intended outcomes. In response, the PI stated that the project aims to produce sustainable fibers in bulk for applications such as bio-composites and hygiene textile products. He explained that he has successfully extracted short fibers in mull form from agricultural waste, specifically banana fruit, and utilized these fibers for technical textile applications. Additionally, the PI highlighted the development of a portable machine capable of extracting bulk quantities of fiber from agricultural waste. This machine has three times the production capacity of commercially available Raspador machines and reduces operating costs by 30%.

iii. The committee inquired whether the PI had conducted absorbency tests on the fibers developed from agricultural waste and performed a comparative analysis with commercially available fibers. The PI reported that the extracted fibers exhibited 26% higher absorbency compared to fibers derived from commercially available wood pulp.

iv. The committee asked the PI to explain how his technology is novel compared to existing solutions. However, the PI was unable to effectively demonstrate the novelty of his developed machinery.

v. The committee questioned the PI on the measures planned to separate short fibers from long fibers to make them compatible with textile machinery, such as carding, cross-lapping, and needle punching.

vi. The committee further highlighted the challenges posed by natural coatings on fibers like banana, bamboo, and pineapple, which can cause slippage or fiber rupture during processing. They asked the PI to explain his strategy for addressing these issues.

i) Discussion and Suggestions by Committee Members –

i. The committee concluded that the proposal lacked novelty, and the PI failed to provide a clear explanation of how the developed machinery would address the removal of short fibers or demonstrate its efficiency in preventing fiber slippage and rupture during processing.

j) Decision- *Not Recommended*

2. **Proposal: Sensorized Jacket for Exergames and Motor Rehabilitation (Resubmitted from 6th EMC)**

a) Proposed By (Project Leader/PL) –Ms. Rajam Sheela

b) Category – Startup/ Company

c) Registration No - NTTM-TEXTILES-00050

d) Proposal ID - STR-24-00215

e) Name of the Start-up/Company - Om Raaj Solar and Wind Power Private Limited

f) Incubator – Wool Research Association (WRA)

g) Total Proposed Cost - INR 50,00,000

- Ministry's Contribution – INR 45,00,000
- PL's Contribution – INR 5,00,000

h) Duration – 18 months

i) Deliberations during presentation:

i. The PI was asked to outline the key objectives of the proposal and provide justifications to the suggestions made during the 6th EMC meeting. In response, the PI stated that in-house sensors had been developed and the jacket had been redesigned.

ii. The committee inquired about the novelty of the adopted technology and how it differed from existing market solutions, noting that the proposal involved using standard textile materials with integrated sensors. They emphasized that the proposal does not align with the GREAT scheme, as its novelty lies in the sensor component rather than the textile material.

iii. The committee asked the PI to address the commercial scalability of the product

iv. The committee advised the PI to focus on developing sensors from textile components, as this would align the proposal with the requirements of the GREAT scheme.

j) Discussion and Suggestions by Committee Members –

i. The committee decided that the proposal does not comply with the GREAT scheme due to the lack of novelty in the textile component, with the innovation being limited to the sensors developed in-house. Additionally, the PI did not adequately address the commercial scalability of the product.

k) **Decision –*Not Recommended.***

3. **Proposal: Design and Development of Advanced Shuttle-Less Weaving Machines for the Indian Power Loom or Shuttle Loom Sector (Resubmitted from 5th EMC)**

   a) Proposed By (Project Leader/PL) – Mr. Rajasekar

   b) Category – Start-up/Company

   c) Registration No - NTTM-TEXTILES-00290

   d) Proposal ID - STR-24-00228

   e) Name of the Start-up/Company – Retro Wovens Pvt. Ltd

   f) Incubator – Atal Incubation Center

   g) Total Proposed Cost - INR 48,80,000

      - Ministry's Contribution – INR 43,92,000
      - PL's Contribution – INR 4,88,000

   h) Duration – 16 Months

   i) Deliberations during presentation:

      i. The committee requested the PL to outline the key objectives, the novelty, and the connection of the proposal to Technical Textiles. In response, the PI explained that the proposal incorporates a heavy beat-up mechanism along with an electronic take-up and let-off methodology, designed to produce heavy denier fabrics specifically suited for technical textiles.

      ii. The committee noted that the technology is readily available in the market and lacks novelty. In response, the PI clarified that his machinery is a hybrid jacquard, capable of automatically switching between an electronic jacquard and a dobby mechanism.

   j) Discussion and Suggestions by Committee Members –

      i. The committee decided that the proposed technology lacks novelty, as it is already available in the market. Additionally, the proposal failed to demonstrate how the machinery would contribute to the advancement of Technical Textiles.

   k) Decision – *Not Recommended*.

4. **Proposal - Design and development of pilot scale innovative Zero Solid Discharge (ZSD) system for resource recovery from final residue in textile and industrial ZLD plants (circularity and sustainability) (Resubmitted from 6th EMC)**

a) Proposed By (Project Leader/PL) – Mr. Lakshmikanthan

b) Category – Start-up/Company

c) Registration No - NTTM-TEXTILES-00299

d) Proposal ID - STR-24-00234

e) Name of the Startup/ Company - Watermight Technologies India Private Limited

f) Incubator – Atal Incubation Centre, Tirupur

g) Total Proposed Cost - INR 47,82,250

- Ministry's Contribution – INR 43,04,025
- PL's Contribution – INR 4,78,225

h) Duration – 16 Months

i) Deliberations during presentation:

i. The PI failed to attend the meeting as there was a technical issue at his end.

j) Discussion and Suggestions by Committee Members –

i. The committee decided that the proposal should be sent to Director BTRA (expert) and DG NITRA(Expert) for examination and comments . Following this Joint Mission Director – RD&I to review the findings, and if found satisfactory , the proposal should be presented at the upcoming EPC Meeting after approval of Chairperson of EMC.

Agenda 3: Consideration of fresh Proposal under GREAT:

A total of 23 proposals were reviewed from the GREAT MIS portal for initial scrutiny at the Mission Directorate level. Out of these, only 3 proposals were found to be for eligible according to the GREAT guidelines and were considered for placing before EMC for further review and decision by the EMC committee. Out of these 3 proposals, 2 proposals were reviewed in the 7th EMC meeting and 1 proposal is to be taken in the upcoming review meeting.

The 3 proposals which were discussed during the meeting are as follows:

1. **Proposal: Commercialization of sustainable and reusable menstrual products developed indigenously**

a) Proposed By (Project Leader/PL) – Dr. Kavyashree Shetty

b) Category – Startup/ Company

c) Registration No - NTTM-TEXTILES-00036

d) Proposal ID - STR-24-00191

e) Name of the Start-up/Company - VSV VENTURES PVT LTD

f) Incubator – The Synthetic & Art Silk Mills' Research Association (SASMIRA)

g) Total Proposed Cost - INR 58,20,000

- Ministry's Contribution – INR 52,38,000
- PL's Contribution – INR 5,82,000

h) Duration – 18 months

i) Deliberations during presentation:

i. The committee requested the PI to confirm the novelty of the project. In response, the PI stated that the product is ultra-thin, with a thickness of 8 to 9mm, and can endure up to 40 wash cycles, in contrast to current market alternatives that are designed to last only 20 wash cycles.

ii. The committee inquired whether the absorbent material was applied only to a specific region or across the entire surface of the product. The PI clarified that the absorbent material is applied solely to a specific region.

iii. During discussions, the committee raised concerns about the potential deterioration of the product after multiple wash cycles. The PI responded by stating that, in collaboration with his incubator (SASMIRA), several trials have been conducted, and the product meets BIS standards for wash fastness and biodegradability.

iv. The committee highlighted that maintaining the product's hygiene could be a significant challenge, as its efficiency may decline with each wash cycle. In response, the PI assured that the biological burden of the product is minimal and washing it by hand in cold water is sufficient for maintenance.

v. The committee asked the PI to confirm the product's costing. The PI acknowledged that while an in-depth costing has not yet been done, the estimated price range is between INR 450 and INR 550.

j) Discussion and Suggestions by Committee Members –

i. The committee decided that the proposed technology lacks significant novelty, with the only promising aspect being its claim to withstand 45 wash cycles. Additionally, the PI has not conducted a detailed financial analysis of the product, nor assessed its competitiveness in the market compared to existing technologies.

k) **Decision –*Not Recommended.***

2. **Proposal: Smart Garments: Integrating IoT and Machine Learning for Advanced Bio-Sensing Applications**

   a) Proposed By (Project Leader/PL) – Mrs. Monica Sharma plawat

   b) Category – Startup/ Company

   c) Registration No - NTTM-TEXTILES-00291

   d) Proposal ID - STR-24-00246

   e) Name of the Start-up/Company - Slimiot Technologies Private Limited.

   f) Incubator – Northern India Textile Research Association (NITRA)

   g) Total Proposed Cost - INR 51,00,000

      - Ministry's Contribution – INR 45,90,000
      - PL's Contribution – INR 5,10,000

   h) Duration – 18 months

   i) Deliberations during presentation:

      i. The committee requested the PI to confirm the novelty of the project. In response, the PI explained that she has designed a jacket with multiple sensors which can collect vitals from patient having physical disabilities.

      ii. The committee asked the PI to highlight the textile components in the final product. The PI clarified that she is only integrating sensors into the product to collect vital data. However, the committee pointed out that the proposal does not align with the GREAT scheme, as the novelty of the project lies in the sensor component, not the textile material. They also noted that similar products are already available in the market.

   j) Discussion and Suggestions by Committee Members –

      a) The committee decided that the proposal does not comply with the GREAT scheme due to the lack of novelty in the textile component, with the innovation being limited to the sensors developed in-house.

   k) Decision- *Not Recommended*

3. **Proposal - Novel E-Textiles Woven with Shape Memory Materials to Design Intelligent Wearables for Healthcare and Wellness Applications**

   a) Proposed By (Project Leader/PL) – Mrs. Divyakshi Kaushik

   b) Category – Startup/ Company

c) Registration No - NTTM-TEXTILES-00319

d) Proposal ID - STR-24-00245

e) Name of the Start-up/Company - Anatomech Private Limited.

f) Incubator – Venture Center

g) Total Proposed Cost - INR 50,00,000

- Ministry's Contribution – INR 45,00,000
- PL's Contribution – INR 5,00,000

h) Duration – 18 months

i) Deliberations during presentation:

i. The PI failed to attend the meeting as there was a technical issue at his end.

j) Discussion and Suggestions by Committee Members –

i. The committee mentioned that the proposal should be taken again in the 8th EMC meeting.

k) Decision- *To be Resubmitted*.

(Dr Renu Swarup)

Chairperson

Former Secretary to Government of India

Department of Biotechnology ,

Ministry of Science &Technology

Annexure – I

1. Dr. Renu Swarup, Former Secretary, Dept. of Biotechnology (DBT), Ministry of Science and Technology - ***In Chair***
2. Mr. Ashok Malhotra, Mission Director
3. Prof. Anirban Guha, Dept. of Mechanical Engineering, IIT Bombay
4. Dr. Anoop Rakshit, ITTA, Executive Director, Indian Technical Textile Association (ITTA)

5. Dr. T.V. Sreekumar, Director, BTRA
6. Dr. Arindam Basu, Director, NITRA
7. Mr. Ravi Prakash, Assistant Director, SASMIRA
8. Ajay Pandit, Joint Mission Director (R&I), NTTM, Ministry of Textiles

Project Leaders and Team Members

1. Mr. Yuvaraja Duraisamy
2. Mrs. Rajam Sheela
3. Mr. Rajasekar
4. Mr. Lakshmikanthan
5. Dr. Kavyashree Shetty
6. Mrs. Monica Sharma plawat
7. Mrs. Divyakshi Kaushik